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Teaching Pretend Play Skills to a Student with Autism Using Video Modeling with a Sibling as Model and Play Partner

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Abstract

We taught a four-year-old boy diagnosed with autism and his older brother to engage in four pretend play scenarios using video modeling. The older brother acted in the video models with a typically developing peer. Both the participant and his sibling successfully engaged in the four scenarios during intervention as well as maintenance and generalization probes conducted in their home. This case study illustrated that siblings of children with autism can perform in video models as well as engage in pretend play with their sibling with autism. In addition, the child with autism may benefit from sibling-oriented interventions as indicated by the intervention data and the parent and sibling survey questions presented in the current study.

KEY WORDS: video modeling, pretend play, autism, sibling

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A growing body of literature supports the beneficial effects of video modeling procedures to teach students with autism a variety of skills including perspective taking (Charlop-Christy & Daneshvar, 2003, LeBlanc et al., 2003), language (Charlop & Milstein, 1989, Charlop-Christy, Le & Freeman, 2000, Lowy Apple, Billingsley & Schwartz, 2005, Nikopoulos & Keenan, 2003, Nikopoulos & Keenan, 2004, Wert & Neisworth, 2003), daily living skills (Charlop-Christy, Le & Freeman, 2000, Haring, Kennedy, Adams, & Pitts-Conway, 1987, Shipley-Benamou, Lutzker & Taubman, 2002), play (D'Ateno, Mangiapanello, & Taylor, 2003, Taylor, Levin & Jasper, 1999), and academic skills (Kinney, Vedora & Stromer, 2003). In video modeling interventions, footage is created that depicts one or more individuals engaging effectively in a sequence of behaviors. The learner views the videotape/DVD and is given the opportunity to imitate the observed responses. Video modeling research illustrates that participants rapidly acquire the target skills with skill maintenance over long periods of

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time (e.g. Charlop & Milstein, 1989, Charlop-Christy & Daneshvar, 2003, Haring, Kennedy, Adams, & Pitts-Conway, 1987). Two common characteristics of children with autism, excellent memory and echolalia, may enhance positive response to video modeling because exact duplication of the model is desired (Charlop & Milstein, 1989).

Technological advances have made video modeling a readily accessible intervention that is easy to use and has minimal costs (Charlop & Milstein, 1989; Charlop-Christy, Le & Freeman, 2000; Goldsmith & LeBlanc, 2004). Charlop-Christy et al. (2000) directly compared video modeling with in vivo modeling to teach 5 children with autism (ages 7-11) tasks such as labeling emotions, greetings, independent and cooperative play, conversational speech, and daily living skills. Children had faster acquisition and better generalization in the video modeling condition than in the in vivo condition and the authors suggested that the video modeling condition was more time and cost efficient for 4 out of the 5 participants.

In addition to cost and time effectiveness, there may be several potential advantages to using video models to teach individuals with autism. One potential advantage is the systematic repetition that can be provided by showing the same video model numerous times (Charlop & Milstein, 1989, Taylor, Levin & Jasper, 1999) as opposed to small variations that may arise with live models. Video models can conveniently employ strategies that help promote generalization such as programming multiple exemplars, incorporating common stimuli, and natural contingencies and environments (e.g. Charlop & Milstein, 1989, Charlop-Christy & Daneshvar, 2003, Haring, Kennedy, Adams, & Pitts-Conway, 1987) by arranging these aspects in the creation of the video. Finally, videotaping allows use of a variety of models that might not be available for multiple trials with live modeling including typical peers (Nikopoulos & Keenan, 2003), siblings (Taylor, Levin & Jasper, 1999), and self as model (Wert & Neisworth, 2003).

Siblings may be particularly valuable as video models, especially when targeting play skills. First, siblings of children with autism may often attempt to engage their brother or sister in play or conversation though they may do so ineffectively. They may also express an interest in helping to teach their sibling new skills (Taylor, 2001) and they are the most frequently available play partner. While researchers have demonstrated that siblings of children with autism can effectively implement behavioral interventions (e.g., Celiberti & Harris, 1993; Schreibman, O'Neill and Koegel, 1983), only one study on video modeling has used siblings both as model and conversational partner to teach play (Taylor et al., 1999).

Taylor et al. (1999) used a video modeling intervention to increase the play comments of two children with autism directed towards their

siblings. Each participant viewed video models of his sibling and an adult engaging in scripted verbal exchanges involving play materials. Participants then practiced the scripted verbal exchanges with an adult with the materials from the video present. Probe sessions with no video model were then conducted with the participant and his sibling to measure the number of scripted play comments directed towards the sibling. The results of the study indicated that the first participant successfully learned to make the scripted play comments in each of the three targeted play activities. An additional forward-chaining component was added to the treatment package for the second participant in an attempt to increase the length of play-related comments. The second participant also made more sibling-directed play-related comments following video modeling including unscripted statements in addition to the scripted play statements. Thus, video modeling proved to be a successful intervention for producing sibling-directed play comments for both participants.

The purpose of the current case study is to replicate the effects demonstrated by Taylor et al. (1999) of using siblings as video models and play partners with a 4-year-old child with autism in a pretend play context. However, the current study differs from Taylor et al study in several ways. First, the current study removes the component of practice with adults after viewing the video models to determine if the interventions can be simplified without detriment to effectiveness. Second, all sessions in this study were conducted at a center based program instead of the participants' home as in Taylor et al; follow-up, however was conducted in the child's home. Finally, measures of appropriate play are incorporated in the current study but were not included in Taylor et al.

Method

Participants and Setting

A 4-year-old boy diagnosed with autism participated in this study. He scored in the mild to moderate range on the Childhood Autism Rating Scale (Schopler, Reichler, & Renner, 2002). He could receptively and expressively label numerous objects, request preferred items, and greet others. However, he did not engage in pretend play with his siblings or peers. Sessions occurred at a university-based preschool program for students with autism. The brother was the play partner throughout the study, which occurred during the siblings recess break from his on-campus elementary school. Generalization and follow-up sessions occurred in the participant's home and included a 6-year-old brother and their 32-year-old mother as play partners for 2 scenarios.

Materials

The university based preschool classroom common space was used for the play area and for filming and viewing the video models. The space included a television and DVD player on a stand, white dry erase board, a large table and 4 small chairs. Sonic Vegas and DVD Architect software was used to create the DVDs on an IBM compatible personal computer. The video models were viewed on a 19-inch color television and were played on a Mitsubishi DVD player. Play materials used in the study were not available to the participant except during experimental sessions. Detailed play scripts are available from the authors upon request.

The firefighter scenario was approximately 70 seconds long and included two firefighter jackets and hats, a yellow garden hose, and a girl baby doll. The firefighter scenario contained 4 scripted statements (3-4 word length) and 7 actions. The cowboy scenario was approximately 25 seconds long and included two cowboy hats and handkerchiefs, two toy guns, and a sheriff's badge. The cowboy scenario contained 4 scripted statements (2-5 word length) and 7 actions. The teacher scenario lasted approximately 20 seconds and included a pointer and a white board with written letters, numbers, and shapes. The teacher scenario contained 6 scripted statements (2-5 word length) and 5 actions. The doctor scenario was approximately 30 seconds in duration and used a *Fisher Price Medical Kit* (i.e., blood pressure cuff, stethoscope, thermometer, syringe, bandage, otoscope). The doctor scenario contained 5 scripted statements (2-5 word length) and 6 actions. The participant's 7-year-old brother acted in 2 of the 4 video models while 3 other typically developing children acted in the other two videos.

Response Definition and Measurement

A response was scored as a modeled behavior (action) if the participant performed the correct action modeled in the video within 5 seconds of his sibling's corresponding action or verbal statement during the play sequence. A response was scored as a scripted statement if the participant verbally stated all of the words in the script from the video model within 5 seconds of his sibling's corresponding verbal statement or action. Spontaneous words were coded if the participant stated a novel word or sentence contextually related to the ongoing scenario. (For example, "I'll drive" while climbing into fire truck was scored as 2 unscripted words. However, "there's a fire" while playing cowboy was not scored due to contextual mismatch.) A second trained observer independently transcribed and/or coded 30% of all sessions. Interobserver agreement was calculated by dividing the total number

of agreements by the total number of agreements plus disagreements and multiplying by 100 in order to get a percentage for sessions scored for reliability. Interobserver agreement (IOA) for modeled behaviors ranged from 86-100%. IOA for scripted statements and spontaneous words was 100%.

Two satisfaction surveys were administered as indices of social validity. A parent satisfaction survey consisted of 4 questions with a four-point Likert rating scale with anchors 1 (not at all), 2 (somewhat/ a little), 3 (mostly/some), or 4 (totally/ a lot). Two additional yes/no questions and 2 open ended questions were included in the parent satisfaction survey. A sibling satisfaction questionnaire with 7 yes/ no questions and 3 open ended questions was administered to the participant's brother at the completion of the study.

Procedures

The experimental design for this case study was an AB design replicated across four play scenarios. The four video modeling scenarios were taught in sets of two with firefighter and cowboy being introduced first and doctor and teacher beginning approximately one month later. Actions and scripted statements varied across scenarios but all procedures were identical. Sessions occurred once per day, most school days based on sibling availability. The sibling learned his lines and participated in creation of the video models prior to baseline sessions for each scenario.

Baseline. The participant and his sibling were instructed to "Go play." The materials were available for each play scenario but no video models were shown. No systematic consequences were delivered following any response(s). The sibling was instructed to say his lines and perform his part regardless of what his brother was doing. The sibling was also instructed not to help his brother. The baseline sessions lasted approximately 3 minutes for each of the 4 play scenarios.

Video modeling. The participant and his sibling were instructed to "Watch T.V." and were shown a video model depicting one of the 4 pretend play scenarios. Then, they were instructed to "Go play." All necessary materials from the video were available. Neither the adult nor sibling provided other instructions, prompts, or reinforcers during play. The participant and his sibling were allowed up to 3 minutes to engage in each play scenarios or less time if they completed all of the scripted statements and actions depicted in the videos.

Follow up. Follow up sessions to assess maintenance and generalization were identical to baseline but were conducted in the participant's home with a different sibling and the mother as play

partners. Follow up data for all four scenarios were collected on the same day and up to three minutes were allotted for play.

Results

Participant performance for each of the four targeted play scenarios is presented in Figure 1 for the firefighter (upper panel) and cowboy (lower panel) scenarios and Figure 2 for the doctor (upper panel) and teacher (lower panel) scenarios. Data are presented as the percentage of actions/scripted statements performed and the frequency of spontaneous words produced during each condition. In the firefighter scenario, the participant acquired both the specified actions and scripted statements and performed them consistently over time. In the cowboy scenario, the participant acquired approximately 40% of the actions while scripted statements increased over time ranging from 50-100% over the last half of the video modeling phase. The participant rapidly acquired the actions for the doctor scenario, and scripted statements increased over the course of the phase to 60% during the last video modeling session. In the teacher scenario, both actions and scripted statements increased over the course of the video modeling phase to approximately 60%. Responding during follow up sessions was similar to treatment for all scenarios indicating that play skills maintained over time and generalized to a new setting and new partners. The number of spontaneous words varied greatly from session to session across all scenarios and was generally similar to levels observed during baseline sessions.

Video footage from a sample of intervention sessions indicated that the brothers took approximately 120 seconds to complete the firefighter scenario (range= 103 s - 130 s), 60 s for the cowboy scenario (range= 45 - 64 s), 90 s for the doctor scenario (range= 80 - 122 s), and 35 s for the teacher scenario (range= 28 - 47 s). Only one contextually inappropriate scripted statement occurred (i.e., "there's a fire!" at the beginning of the cowboy scenario). Additionally, the participant stated the sibling's line, "Be careful" once, in the firefighter scene when the sibling forgot it. These two statements are not included in the depicted data because they did not meet the criteria for contextually appropriateness and match to the script and role. No differences were observed across scenarios, regardless of whether the sibling served as the video model or not.

Several factors indicate generalization of skills during the last follow up session, which occurred at the participant's home. All of the play materials were available in the living room and the instruction "Go play" was given to the participant and his trained sibling. No video models were shown. They independently moved from one play scenario to another without adult prompts. After the participant

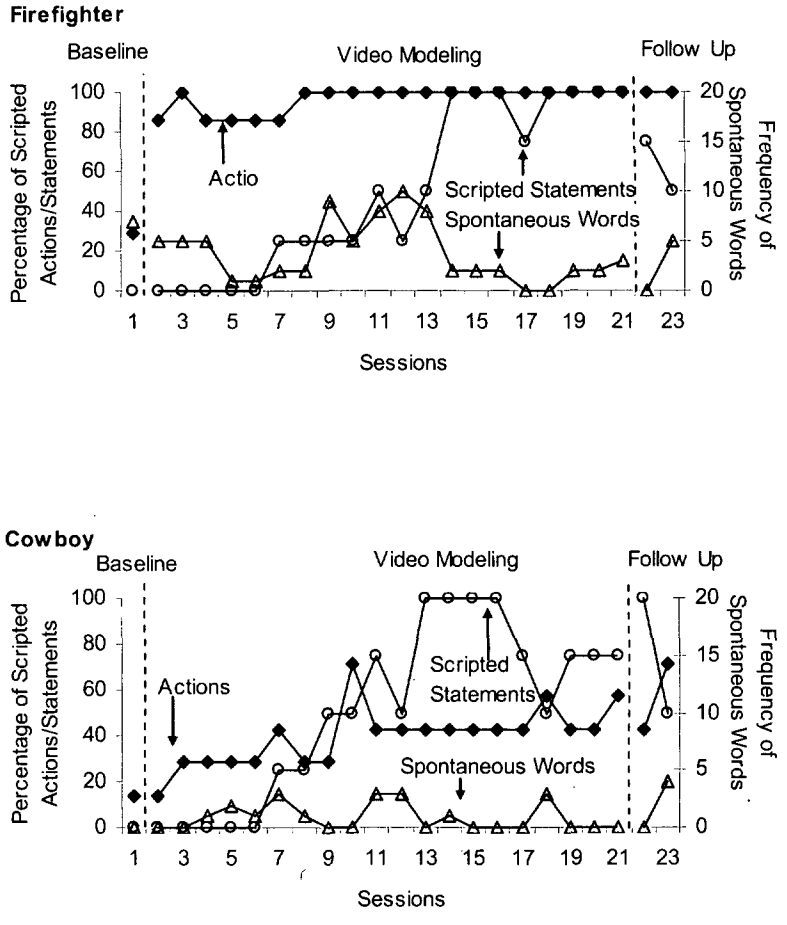

Figure 1. Results for the firefighter (upper panel) and cowboy (lower panel) play scenarios. Scripted play actions (closed diamond) and statements (open circle) represent the percentage of video-modeled actions/statements emitted during play and are scaled on the primary Y-axis. Frequency of spontaneous contextually-related words (open triangle) are scaled on the secondary Y-axis.

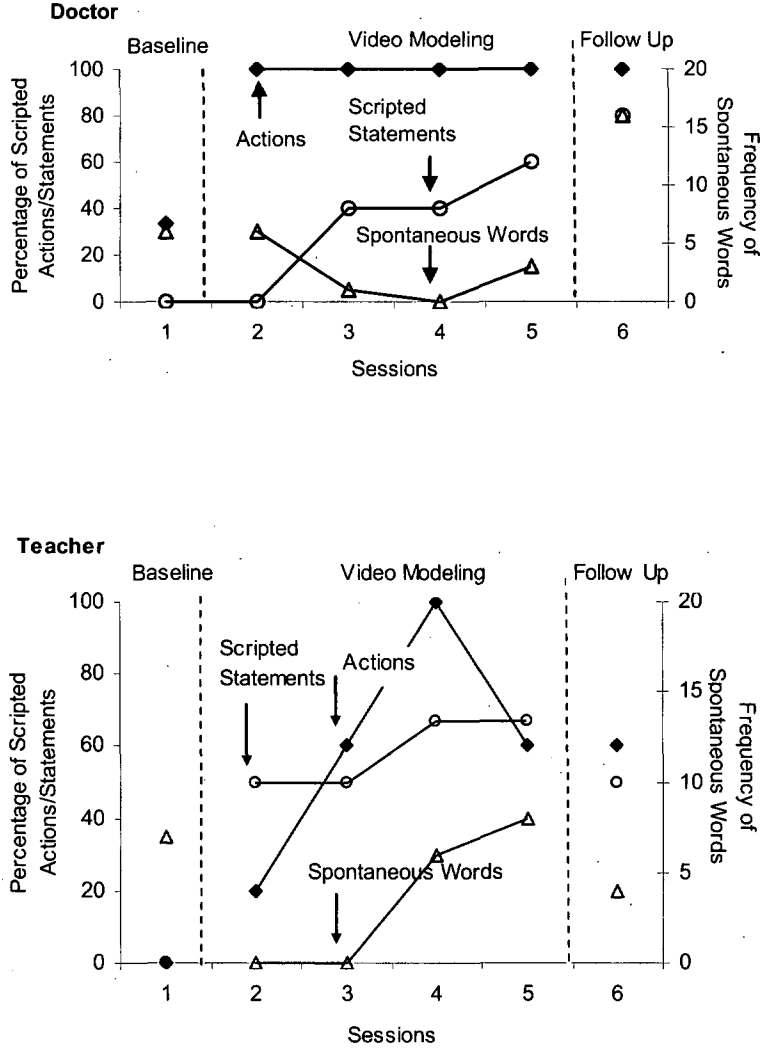

Figure 2. Results for the doctor (upper panel) and teacher (lower panel) play scenarios. Scripted play actions (closed diamond) and statements (open circle) represent the percentage of video-modeled actions/statements emitted during play and are scaled on the primary Y-axis. Frequency of spontaneous contextually-related words (open triangle) are scaled on the secondary Y-axis.

and his trained sibling finished playing, another sibling asked the participant to play. This sibling had no prior training or experience with the play materials and scripts and had not viewed the video models. In response to the request, the participant spontaneously played the roles that had previously been played by his sibling in previous sessions (e.g., patient in the doctor scenario). The participant also initiated play with his mother and was able to perform the doctor and teacher scenarios with her as well.

Results from the parent satisfaction survey indicated that the mother was totally satisfied with the video modeling program. She gave the highest numerical rating for each question and responded that she would use the video modeling program again and recommend it to other families. The sibling reported that acting in the video models and playing with his brother was fun and that he had learned how to play with him. Since there was only one participant in this study who was receiving clinical services from the experimenters, the social validity measures were not anonymous and may have been impacted by social desirability.

Discussion

The current study extends the literature on sibling interventions and video modeling in several ways. The results support the findings from Taylor et al. (1999) that siblings of children with autism can be taught to serve as video models and conversation/play partners. The potential benefits of using siblings in video modeling interventions include ready availability, parental support and willingness to have them participate, and the increased likelihood of generalization of play skills at home. Additionally, our satisfaction data suggest that video modeling produced positive outcomes for the sibling and family, in addition to the student with autism. With respect to video modeling, this study did not use extraneous reinforcement or repeated practice, indicating that the video modeling procedure alone was effective in producing scripted and unscripted statements and appropriate play actions with a sibling. Video viewing and play for two scenarios averaged less than 5 minutes in duration indicating that this was a time efficient intervention. Additionally, after reviewing the script at home, creation of the video models took three or fewer "takes" for each scenario with minimal verbal and visual cues and praise.

The amount of contextually-related spontaneous words varied substantially from session to session with some higher rates of responding in baseline than in treatment sessions. While contextually-related statements were not formally categorized, it appeared that the majority of statements that occurred during baseline were simple

labels or descriptions of the props used in the play scenario (e.g., "hose", "gun", etc.). Following the video modeling intervention, the contextually-related statements appeared to be composed of more complex statements and questions and responses to verbal queries from the play partner (e.g. "Where's the fire?", "What shape?", " What number is it?"). Future studies might code type of contextually-related spontaneous statements for a more detailed analysis.

While the results of this preliminary investigation are encouraging, several methodological limitations need to be mentioned. First, the effects were demonstrated using only a quasi-experimental, A-B research design. While the effectiveness of the intervention was replicated across four play scenarios, a multiple baseline design across play scenarios would have significantly strengthened the conclusions that could be drawn. Second, the procedures were evaluated with only a single participant. Future research should investigate these procedures using a more rigorous experimental design and with additional participants to confirm their utility. Additional studies might also attempt to identify the prerequisite skills that students need to benefit from video modeling interventions. A third weakness of the study is the lack of data for unscripted but appropriate actions, though a review of a small sample of available footage indicated that novel play actions occurred in the doctor scenario.

In summary, technology-based interventions such as video modeling have been successfully used to teach students with autism a wide variety of skills including those needed to successfully engage in pretend play with other children. Recent advances in digital video technology have made the tools necessary to create video models (e.g., digital video cameras, DVD burners) readily accessible and affordable for educational professionals and parents. The portability of these tools and the generalization of skills demonstrated in this case study suggest that professionals and parents can collaborate across home and school settings to incorporate multiple family members to teach pretend play achieving positive outcomes for the family as well as the child with autism.

References

Celiberti, D. A. & Harris, S. L. (1993). Behavioral intervention for siblings of children with autism: A focus on skills to enhance play. *Behavior Therapy, 24,* 573-599.

Charlop-Christy, M. H., & Daneshvar, S. (2003). Using video modeling to teach perspective taking to children with autism. *Journal of Positive Behavior Interventions, 5,* 12-21.

Charlop, M. H., & Milstein, J. P. (1989). Teaching autistic children

conversational speech using video modeling. *Journal of Applied Behavior Analysis, 22,* 275-285.

Charlop-Christy, M. H., Le, L., & Freeman, K. A. (2000). A comparison of video modeling with in vivo modeling for teaching children with autism. *Journal of Autism and Developmental Disorders, 30,* 537-552.

D'Ateno, P., Mangiapanello, K., & Taylor, B. A. (2003). Using video modeling to teach complex play sequences to a preschooler with autism. *Journal of Positive Behavior Interventions, 5,* 5-11.

Haring, T.G., Kennedy, C. H., Adams, M. J., & Pitts-Conway, V. (1987). Teaching generalization of purchasing skills across community settings to autistic youth using videotape modeling. *Journal of Applied Behavior Analysis, 20,* 89-96.

Kinney, E. M., Vedora, J., & Stromer, R. (2003). Computer-presented video models to teach generative spelling to a child with an autism spectrum disorder. *Journal of Positive Behavioral Interventions, 5,* 22-29.

LeBlanc, L. A., Coates, A. M., Daneshvar, S., Charlop-Christy, M. H., Morris, C., & Lancaster, B. M. (2003). Using video modeling and reinforcement to teach perspective-taking skills to children with autism. *Journal of Applied Behavior Analysis, 36,* 253-257.

Lowy Apple, A., Billingsley, F., & Schwartz, I. S. (2005). Effects of video modeling alone and with self-management on compliment-giving behaviors of children with high-functioning ASD. *Journal of Positive Behavioral Interventions, 7,* 33-46.

Nikopoulos, C. K., & Keenan, M. (2003). Promoting social initiations in children with autism using video modeling. *Behavioral Interventions, 18,* 87-108.

Nikopoulos, C. K., & Keenan, M. (2004). Effects of video modeling on social initiations by children with autism. *Journal of Applied Behavior Analysis, 37,* 93-96.

Schopler, E., Reichler, R. J., & Renner, B. R. (2002). *The childhood autism rating scale (CARS)* (9th ed.). Los Angeles: Western Psychological Services.

Schreibman, L., O'Neill, R. E., & Koegel, R. L. (1983). Behavioral training for siblings of autistic children. *Journal of Applied Behavior Analysis, 16,* 129-138.

Shipley-Benamou, R., Lutzker, R., & Taubman, M. (2002). Teaching daily living skills to children with autism through instructional video modeling. *Journal of Positive Behavior Interventions, 4,* 165-175.

Taylor, B. A. (2001). Teaching peer social skills to children with autism. In C. Maurice, G. Green, & R. M. Foxx (Eds.), *Making a Difference: Behavioral Intervention for Autism (pp. 83-96).* Austin, TX: Pro-Ed.

Taylor, B., Levin, L., & Jasper, S. (1999). Increasing play-related statements in children with autism toward their siblings: Effects of video modeling. *Journal of Developmental and Physical Disabilities, 11,* 253-264.

Wert, B. Y., & Neisworth, J. T. (2003). Effects of video self-modeling on spontaneous requesting in children with autism. *Journal of Positive Behavioral Interventions, 5,* 30-34.

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